Evaluation of Indonesia Sustainable Palm Oil Certification Using Green SCOR

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Abstract

The increasing number of the palm oil industry in Indonesia needs to consider the quality of life of who live around it. Consequently, this prompted the Indonesian government to release an environmental certification as Indonesia Sustainable Palm Oil (ISPO). This is a regulation set by the government to develop the palm oil industry in Indonesia. Furthermore, the results of processed wastewater in this case study were still found to be incompatible. Obviously, ISPO certification needs to be evaluated because the assessment criteria have scope involving plantation, milling industry, distribution vehicle which it incorporated into the supply chain strategy. The purpose of this study is to evaluate the implementation of environmental management based on the ISPO certification criteria. The supply chain strategy using Green SCOR was adopted to overcome problems through purposive sampling technique into 10 respondents who were directly responsible for implementing ISPO certification. The finding showed that there were 23 indicators of environmental management and green supply chain performance was obtained at 84.31%. Further studies are suggested to compare the application of several environmental management certifications by using green SCOR to obtain a comprehensive evaluation of the implementation of production activities.

Keywords: Green SCOR, ISPO Certification, Palm Oil, Indonesia.

Introduction

Environmental management is part of the responsibility of each individual or group as an evaluation tool in the production of an industry. Environmental management is also associated with increasing per capita income and living standards, improving the quality of public education, improving the quality of health and some positive impacts of industrial development (Farouq et al. 2017). A study was conducted on a company located in Indonesia. Furthermore, case studies on this industry are in the fields of plantations and processing of crude palm oil (CPO). The problem in this research is the implementation of certification that has been received by the company, namely the Indonesian Sustainable Palm Oil (ISPO)

certification. ISPO is the standard enactment of the development system of oil palm plantations established by the Indonesian government since 2011. From the research, the results of the field survey and data on the results of processed liquid and solid wastes was obtained, that is that there are still processed wastes which are not in accordance with the standards of the Ministry of Environment in Indonesia. Figure 1 shows the palm oil plantation waste from the sequence of raw material processing to CPO processed products.

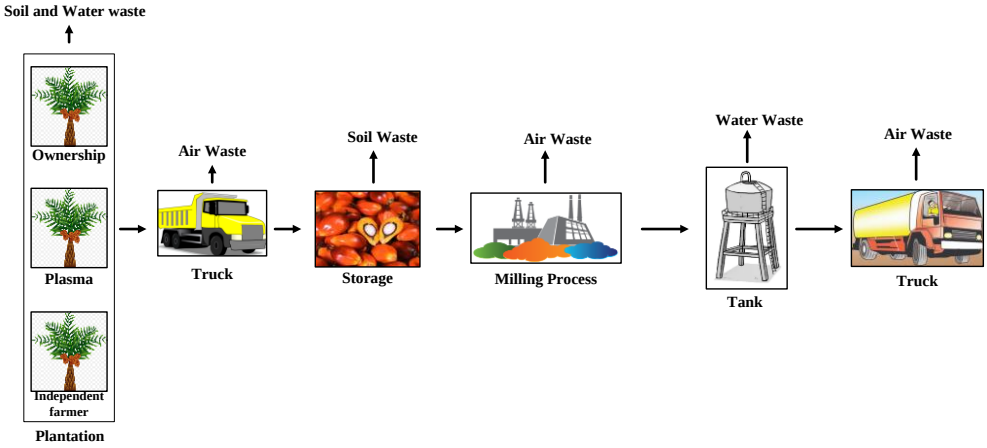

Fig 1: Supply chain strategy and environmental impact

The picture above describes the flow of material from upstream to downstream in the processing of oil palm products. There is some pollution and waste in the supply chain activities of processed palm products. Ideally, companies that have implemented the Indonesian Sustainable Palm Oil (ISPO) certification can maintain quality standards for environmental management (Ernah et al., 2019). Therefore, companies need to carry out periodic environmental management evaluations. Famiyeh et al. (2018) also stated that environmental management evaluation is needed to achieve good environmental performance.

This study adopts the SCOR model method to evaluate environmental management based on entity activities in the palm oil supply chain. Hadiguna and Tjahjono (2017) in their research stated that the formation of palm oil production waste involves supply chain strategies from a series of production processes. Lestari et al. (2014) and Hasibuan et al. (2018) implemented the SCOR model to evaluate company performance based on supply chain strategies. The purpose of this study is to evaluate the implementation of environmental management principles based on ISPO criteria by adopting the SCOR model method. This study limits the determination of criteria based on environmental indicators on ISPO certification.

Evaluating ISPO Certification

The palm oil processing industry in carrying out production activities related to environmental management is evaluated based on several quality standards. Certification is a quality standard set by several parties including the International Standard Organization (ISO), Indonesian Sustainable Palm Oil (ISPO) and the Roundtable on Sustainable Palm Oil (RSPO). This study examines the application of the ISPO certification because this certification is addressed directly by the Indonesian government to regulate the rampant development of oil palm plantations in Indonesia.

ISPO is a regulation established by the agriculture ministry on behalf of the Indonesian government to regulate the increasing development of the palm oil industry in Indonesia and participate in reducing greenhouse gases in addressing environmental problems. This certification aims to ensure that oil palm plantation companies and oil palm planters have applied ISPO principles and criteria correctly and consistently in producing sustainable palm oil. Furthermore, this certificate is valid for 5 years and the company must submit an application for an extension of the certificate to the ISPO Commission 1 year before the validity period of the ISPO certificate expires. There are four main criteria in ISPO certification, which include the legality of independent smallholders, the organization of smallholders and the management of independent smallholders, environmental management and monitoring and sustainable business improvement (Hutabarat, 2017).

Previous study related to environmental management evaluation has been carried out. Cazeri et al. (2017) research Green Supply Chain Management through a literature review and gaps for further research. This study found criteria for environmental indicators that were problematic and needed improvement. Research on the Agro Industry conducted the Green SCM approach resulted that this method able to evaluate environmental management practices (Sehnem and Oliveira, 2016). Schrödl and Simkin (2013) conducted the Green SCOR method and their results showed that a supply chain strategy can provide information and influence on the company's performance index. Based on previous studies, this research position needs to raise the issue of environmental management based on ISPO certification and evaluate the implementation of its certification.

Methodology

Data collection in this study was carried out by a mixed method in the form of conducting interviews and distributing questionnaires (Bimha et al., 2019). The interview process and the distribution of this questionnaire are concerned with ISPO certification to find out environmental management indicators. This research is located in a state-owned company located in Indonesia. In this study the process of distributing questionnaires was carried out using purpose sampling techniques because the samples studied had to be samples that understood about the implementation of ISPO certification. The number of samples in this study was 10 people from the special division who were directly responsible for implementing ISPO certification in the company.

The flow of the palm business process starts from the palm oil plantation to the process of shipping the processed Crude Palm Oil (CPO) by the company. This identification process aims to find out how the ISPO certification process is implemented in the company's supply chain. Then, determining indicators is done by identifying aspects of the company's environment by conducting interviews and gathering information about ISPO certification. After that, adjust the indicators based on the SCOR model method. The validation process is carried out by summarizing indicators into a questionnaire and distributing questionnaires to 10 respondents who have capacity in this study. Among these respondents were company-specific divisions that were given direct responsibility for implementing ISPO certification, which included company assistants consisting of factory quality assistants, factory engineering assistants, factory processing assistants and garden assistants. Finally, the data collection present on several experts in order to validate data.

The process of determining indicators by adopting SCOR model (Bolstorff and Rosenbaum, 2011) has 3 level matrices consisting of level 1 namely SCOR model criteria (Plan, Source, Make, Deliver and Return), level 2 matrix namely SCOR sub-criteria (Responsiveness, Reliability, Flexibility and Asset) and level 3 matrix, the performance indicator. For the determination process carried out at this stage, it is necessary to guide the SCOR main components that become a reference for determining an indicator that falls within certain criteria. These components can be seen in table 1. Furthermore, the determination of the performance of environmental management is based on the weighting process using the analytical

hierarchy process (AHP) method. Balubaid and Alamoudi (2015) stated this method is an individual decision model with a collective approach to the decision making process.

Table 1: The main components of SCOR Model (Bolstorff and Rosenbaum, 2011)

Aspect of SCOR	Definition of SCOR	Environmental definition
Plan	Planning and management or provision	1. Balancing resources with needs 2. Management of business rules 3. Aligning the unit supply chain plan with the financial plan and environmental impact
Source	Supply of inventory products, make to order and design to order.	1. Scheduling delivery, receipt, inspection 2. Identifying and selecting the source of supply 3. Managing business rules, supplier work values and data maintenance 4. Managing inventory, capital assets, incoming products, supplier networks.
Make	Product transformation process to finished status	1. Schedule production activities, remove products, packaging and include specifications for waste disposal 2. Complete engineering for the product 3. Manage performance rules, data, products in process, equipment and facilities, transportation, production networks and supply chain risks
Delivery	Order management, warehouse, transportation and installation for inventory products	1. All steps of order management from request processing, supply, storage and transportation selection 2. Warehouse management from receiving and taking products to load and send products 3. Receive and inspect the product at the location billing to customers
Return	Return of raw materials and receipt of returns from the finished product	1. Steps to return all defective products. 2. Steps for product return maintenance, repair and inspection as a whole 3. The step of returning all excess products from sources identifying the condition of the product 4. Manage the business rules of return, performance, data collection, inventory of return on capital goods, transportation, network configuration and risk of return

Furthermore, the five aspects of SCOR will be explained further into five basic capabilities namely Reliability, responsiveness, flexibility, cost, and assets related to the environment. The definition of these five basic capabilities based on table 2 according to Raheem and Taylor (2003) as follows:

Table 2: Attribute of the Green SCOR

Work Attributes	Definition of SCOR	Environmental Definition
Reliability	Supply chain performance in shipping: the right product, at the right time, in the right conditions and packaging, in the right quantity, with the right documentation, to the right customer	The ability to deliver the right product, reduce waste from product disposal, reduce air emissions and fuel from the transportation used, proper documentation enable all actors in the supply chain to control hazardous substances contained in substances or poisons embedded in certain products so that proper handling, storage and disposal can be carried out
Responsiveness	Supply chain speed in providing products to customers	Environmental impacts that affect the speed of material movement, including regulatory control or pollution steps in a process.
Flexibility	Supply chain agility in response to turn markets into revenue or maintain competitive advantage	The extent to which companies can meet customer demands related to products, their production, transportation and recycling related to the environment
Cost	Costs associated with supply chain operations	Costs in the supply chain related to the environment
Asset	The effectiveness of the organization in managing assets to support requests for satisfaction	Manage assets by reducing environmental impact and reducing internal costs

Result and discussion

The results of identification of environmental management using ISPO certification obtained 23 indicator to evaluate the implementation of certification at this company. Assessment of the performance of environmental management can be seen in table 3.

The table 3 shows that each indicator is consistent. However, in the overall total weight there were indicators with low values which it was return. it can be concluded that the implementation of these indicators was not good and needs to be improved and special treatment. This indicator was returning fruit that is not according to criteria is carried out with due regard to the environment (0.007) whict it was an attribute component of Reliability-Return. Then, supply chain performance for environmental management was obtained at 84.31%. Trienekens and Hvolby (2000) stated the range of good supply chain performance was between 71% - 90%. The company has implemented a good environmental management system, but this does not guarantee future environmental management performance. For this reason, periodic performance measurements of environmental management are required by using the indicators obtained in this study. This is result beneficial for management in order to evaluate environmental management and reduce waste on this case study.

Table 3 : Weighting results using the AHP method

No	Matrix Level I	Matrix Level II	Indicator	weight	Score	%
1	*Plan* (0.35)	*Reliability*	Plant maintenance is carried out with due regard to the environment	0.0243	80%	0.019
			The use of water in the garden does not interfere with the community's water needs	0.0101	65%	0.007
			The company pays attention to the conservation of environmental and cultural protection	0.0313	85%	0.027
			The company conserves land and avoid erosion	0.0104	90%	0.009
			The company analyzes the environmental impact of the AMDAL	0.1056	100%	0.106
			Garden management carries out fire prevention and control	0.0623	80%	0.050
			The company identifies and mitigates GHG	0.011	85%	0.009
			The use of ingredients (pesticides) according to SOP and does not affect water	0.014	75%	0.011
			The company carries out efforts to reduce GHG emissions	0.0101	70%	0.007
		Flexibility	The company carries out efforts to preserve flora and fauna to preserve the environment	0.0215	70%	0.015
			The company conducts the process of monitoring the level of noise, odor, vibration to the community	0.0479	65%	0.031
2	*Source* (0.26)	*Reliability*	Harvesting is carried out in accordance with applicable SOP	0.0154	85%	0.013
			The acceptance of FFB in the sorting process is done according to the SOP	0.0703	90%	0.063
		Asset	No protected forest land is used as plantation land	0.0574	100%	0.057
			The company has an WWTP	0.0226	100%	0.023
			The company uses superior seeds that are properly breeded and equipped with certificates	0.0958	100%	0.096
3	*Make* (0.23)	*Flexibility*	The company conducts waste treatment	0.0782	80%	0.063
			The treatment process is carried out with the best management taking into account environmental aspects	0.1518	75%	0.114
4	*Deliver* (0.11)	*Flexibility*	Handling of the product in shipping must be done well so as to avoid damage, spills or leakage from the packaging	0.0704	70%	0.049
			The transportation process meets the requirements in environmental aspects	0.0187	80%	0.015
			The company has a commitment to environmental aspects of shipping	0.0209	75%	0.016

5	*Return* (0.05)	*Reliability*	Related to B3 waste and chemicals, it is disposed of according to statutory regulations	0.041	90%	0.037
			Returning fruit that is not according to criteria is carried out with due regard to the environment	0.009	80%	0.007
Performance (%)						0.8431

Conclusion

Green SCOR in this research has been able to provide an evaluation of the process of implementing environmental management based on ISPO certification. the results of the study found that the implementation of the ISPO certification based on Green SCOR was good enough. However. there are still some environmental criteria (indicators) that must be improved in their implementation. In this study, the environmental management studied only examined ISPO certification. This certification is a certification given by the Indonesian government to guarantee the development of companies in the field of palm oil processing. Actually, the company applies several environmental management certifications. Future studies are suggested to compare the application of several environmental management certifications by using green SCOR to obtain a comprehensive evaluation of the implementation of production activities.

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